

What is claimed is:

1. A video apparatus for receiving compression encoded digital audio/video signals as audio/video input signals, processing the audio/video input signals and outputting audio/video output signals, comprising:

5 a re-encoder for re-encoding the audio/video input signals and outputting re-encoded audio/video signals;

a recorder for accumulating the re-encoded audio/video signals as accumulated audio/video signals; and

10 a decoder for reading the accumulated audio/video signals as readout audio/video signals and decoding the readout audio/video signals and outputting processed audio/video signals as audio/video output signals.

2. A video apparatus according to claim 1, wherein said re-encoder has internal functions for performing decoding and encoding.

3. A video apparatus according to claim 2, wherein said re-encoder is comprised by:

a decoding section for decoding the audio/video input signals and outputting decoded audio/video signals; and

an encoder for compression encoding the decoded audio/video signals and outputting the compression encoded audio/video signals as the re-encoded audio/video signals.

4. A video apparatus according to claim 2, wherein said re-encoder is comprised by: a decoding section for decoding the audio/video input signals and outputting decoded audio/video output signals;

and audio/video processing section for applying a specific process to the decoded
5 audio/video signals, and outputting processed audio/video signals; and
an encoder for compression encoding the processed audio/video signals, and
outputting compression encoded audio/video signals as the re-encoded audio/video signals.

5. A video apparatus according to claim 4, wherein said audio/video processing section embeds reproduction managing information in the decoded audio/video signals, and outputs audio/video signals having embedded reproduction managing information as the processed audio/video signals.

6. A video apparatus according to claim 2, wherein said re-encoder is comprised by: a decoding section for decoding audio/video input signals and outputting decoded audio/video signals;

an effect information generating section for generating effect information in response
5 to vacancy information representing a vacancy capacity in the recorder;
an audio/video processing section for applying a process based on the effect information to the decoded audio/video signals, and outputting processed audio/video signals; and

- an encoder for compression encoding the processed audio/video signals, and
- 10 outputting compression encoded audio/video signals as the re-encoded audio/video signals.

7. A video apparatus according to claim 6, wherein said effect information generating section outputs an instruction to exclude color difference information as the effect information, when a value of the vacancy capacity represented by vacancy information becomes less than a specific number.

8. A video apparatus according to claim 6, wherein said effect information generating section outputs an instruction to reduce image resolution to a specific value as the effect information, when a value of the vacancy capacity represented by vacancy capacity information becomes less than a specific number.

9. A video apparatus according to claim 6, wherein said effect information generating section outputs effect information so that image resolution is controlled dynamically in accordance with vacancy capacity information, when a value of the vacancy capacity represented by vacancy capacity information becomes less than a specific number.

10. A video apparatus according to claim 2, wherein said re-encoder is comprised by: a decoding section for processing audio/video input signals and outputting decoded audio/video signals; and an encoder for compression encoding the decoded audio/video

5 signals; wherein

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12. A video apparatus according to claim 10, wherein said bit-rate controlling section outputs signals for controlling color difference information as the bit-rate control signals in accordance with values of vacancy capacity represented by the vacancy capacity information,.

13. A video apparatus according to claim 10, wherein said bit-rate controlling section outputs signals for controlling brightness information as the bit-rate control signals in accordance with value of vacancy capacity represented by the vacancy capacity information,

14. A video apparatus according to claim 2, wherein said video apparatus is supplied with a plurality of audio/video input signals, and said re-encoder is comprised by:

a multiplexer for time-division multiplexing of the plurality of audio/video input signals, and outputting time-division multiplexed audio/video signals;

5 a decoding section for decoding the time-division multiplexed signals, and outputting decoded audio/video signals;

an audio/video processing section for applying a specific process to the decoded audio/video signals, and outputting processed audio/video signals; and

an encoder for compression encoding the processed audio/video signals, and
10 outputting compression encoded audio/video signals as the re-encoded audio/video signals.

15. A video apparatus according to claim 2, wherein said video apparatus is supplied with a plurality of audio/video input signals, and said re-encoder is comprised by:

a plurality of decoding sections for decoding the plurality of audio/video input signals individually, and outputting a plurality of decoded audio/video signals;

5 a multiplexer for time-division multiplexing of the plurality of decoded audio/video signals, and outputting time-division multiplexed audio/video signals;

an audio/video processing section for applying a specific process to the time-division multiplexed audio/video signals, and outputting processed audio/video signals; and

an encoder for compression encoding the processed audio/video signals, and
10 outputting compression encoded audio/video signals as the re-encoded audio/video signals.

16. A video apparatus according to claim 2, wherein said re-encoder is comprised by:
a decoding section for decoding audio/video input signals, and outputting decoded audio/video signals;

an image resolution conversion filter for converting a resolution of the video signal
5 portion of the audio/video signals, and outputting converted audio/video signals; and

an encoder for encoding said decoded audio/video signals and said converted audio/video signals, and outputting encoded audio/video signals as the re-encoded signals.

17. A video apparatus according to claim 2, wherein said re-encoder is comprised by:
a decoding section for decoding audio/video input signals, and outputting decoded audio/video signals;

a deleter for deleting a portion of the decoded audio/video signals, and outputting
5 deleted audio/video signals; and

an encoder for separately encoding said decoded audio/video signals and said deleted audio/video signals, and outputting two independent groups of encoded audio/video signals as the re-encoded signals.

18. A video apparatus according to claim 17, wherein said deleter deletes video frames in the decoded audio/video signals at a given frame interval.

19. A video apparatus according to claim 2, wherein said re-encoder is comprised by:

a decoding section for decoding audio/video input signals, and outputting decoded audio/video signals;

an audio/video information memory for temporarily storing the decoded audio/video signals, and outputting stored audio/video signals; and

an encoder for compression encoding the stored audio/video signals, and outputting compression encoded audio/video signals as the re-encoded signals; and

means for outputting a specific video frame stored in the audio/video information memory as a still image.

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20. A video apparatus according to claim 2, wherein said video apparatus is supplied with first audio/video input signals and second audio/video input signals, and said re-encoder is comprised by:

a decoding section for decoding and processing the first audio/video signals, and outputting decoded audio/video signals and coding parameters of the decoded audio/video signals;

a selector for selecting either said decoded audio/video signals or said second audio/video input signals, and outputting selected audio/video signals; and

an encoder for encoding the selected audio/video signals according to the coding parameters, and outputting encoded audio/video signals as the re-encoded audio/video signals.

21. A video apparatus according to claim 2, wherein said video apparatus is further provided with an external decoder for decoding audio/video input signals and outputting externally decoded audio/video signals, and said re-encoder is comprised by:

a decoding section for decoding and processing the audio/video input signals, and
5 outputting internally decoded audio/video signals and coding parameters;

a selector for selecting either said internally decoded audio/video signals or said externally decoded audio/video signals, and outputting selected audio/video signals; and

an encoder for encoding the selected audio/video signals according to the coding parameters, and outputting encoded audio/video signals as the re-encoded audio/video
10 signals.

22. A video apparatus according to claim 2, wherein said video apparatus is supplied with first audio/video input signals and second audio/video input signals, and said re-encoder is comprised by:

a decoding section for decoding and processing the first audio/video signals, and
5 outputting decoded audio/video signals and coding parameters of the decoded audio/video signals;

a selector for selecting either said decoded audio/video signals or said second audio/video input signals, and outputting selected audio/video signals;

an image resolution conversion filter for converting a resolution of the selected
10 audio/video signals, and outputting converted coding parameters;

a coding parameter converter for converting the coding parameter to match a conversion factor of the image resolution conversion filter, and outputting converted coding parameters; and

an encoder for encoding the converted audio/video signals according to the converted coding parameters, and outputting encoded audio/video signals as the re-encoded audio/video signals.

23. A video apparatus for receiving compression encoded digital audio/video signals as audio/video input signals, processing the audio/video input signals and outputting audio/video output signals, comprising:

a recorder for accumulating the re-encoded audio/video signals as accumulated audio/video signals;

a selector for selecting either said audio/video input signals or said readout audio/video signals, and outputting selected audio/video signals; and

a decoder for decoding the selected audio/video signals, and outputting encoded audio/video signals as the re-encoded audio/video signals; and

an encoder for compression encoding the decoded audio/video signals, and outputting compression encoded audio/video signals; wherein

when recording audio/video signals in the recorder, the selector selects the audio/video input signals as the selected audio/video signals, and compression encoded audio/video signals output from the encoder are accumulated in the recorder as the accumulated audio/video signals; and

when externally outputting audio/video signals accumulated in the recorder, the selector selects the readout audio/video signals as the selected audio/video signals; and outputs the decoded audio/video signals output from the encoder as the audio/video output signals.

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24. A re-encoder for receiving compression encoded digital audio/video signals as audio/video input signals for use in a video apparatus for processing the audio/video input signals, wherein said re-encoder re-encodes the audio/video input signals and outputs re-encoded audio/video signals, and said re-encoder is provided with an internal functions for decoding and encoding.

25. A video apparatus according to claim 24, wherein said re-encoder is provided with:
a decoding section for decoding audio/video input signals and outputs decoded audio/video signals; and

an encoding section for compression encoding the decoded audio/video signals, and outputs compression encoded audio/video signals as the re-encoded audio/video signals.

26. A video apparatus according to claim 24, wherein said re-encoder is provided with:
a decoding section for decoding audio/video input signals and outputs decoded audio/video signals;

an audio/video processing section for applying a specific process to the decoded
5 audio/video signals, and outputting processed audio/video signals; and

an encoding section for compression encoding the decoded audio/video signals, and outputting compression encoded audio/video signals as the re-encoded audio/video signals.

27. A video apparatus according to claim 2, wherein said audio/video processing section embeds reproduction managing information in the decoded audio/video signals, and outputs audio/video signals having embedded reproduction managing information as the processed audio/video signals.

28. A video apparatus according to claim 24, wherein said re-encoder is comprised by:
a decoding section for decoding audio/video input signals and outputting decoded audio/video signals;

an effect information generating section for generating effect information in response to vacancy capacity information representing a vacant capacity in the recorder;

an audio/video processing section for applying a specific process to the decoded audio/video signals according to the effect information, and outputting processed audio/video signals; and

an encoder for compression encoding said processed audio/video signals, and outputting compression encoded audio/video signals as the re-encoded audio/video signals.

29. A video apparatus according to claim 2, wherein said effect information generating section outputs an instruction to exclude color difference information as the effect

information, when a value of the vacancy capacity represented by vacancy capacity information becomes less than a specific number.

30. A video apparatus according to claim 28, wherein said effect information generating section outputs an instruction to reduce image resolution to a specific value as the effect information, when a value of the vacancy capacity represented by vacancy capacity information becomes less than a specific number.

31. A video apparatus according to claim 28, wherein said effect information generating section outputs effect information so that image resolution is controlled dynamically in accordance with vacancy capacity information, when a value of the vacancy capacity represented by vacancy capacity information becomes less than a specific number.

32. A re-encoder according to claim 24, wherein said re-encoder is comprised by:
a decoding section for processing audio/video input signals and outputting decoded audio/video signals; and an encoder for compression encoding the decoded audio/video signals and outputting compression encoded audio/video signals as re-encoded audio/video
5 signals; wherein

said encoder is comprised by: a bit-rate controlling section for generating bit-rate control signals in response to vacancy capacity information representing a vacancy capacity of the recorder; and an encoding section for compression encoding said decoded audio/video

signals, in accordance with said bit-rate control signals and outputting said compression
10 encoded audio/video signals.

33. A re-encoder according to claim 32, wherein said bit-rate controlling section outputs signals for controlling time averaged values to be allocated for coding, as the bit-rate control signals, to automatically adjust bit-rates for the compression encoded audio/video signals, in accordance with values of vacancy capacity represented by the vacancy capacity information.

34. A re-encoder according to claim 32, wherein said bit-rate controlling section outputs signals for controlling color difference information as the bit-rate control signals in accordance with values of vacancy capacity.

35. A re-encoder according to claim 32, wherein said bit-rate controlling section outputs signals for controlling brightness information as the bit-rate control signals in accordance with value of vacancy capacity.

36. A re-encoder according to claim 24, wherein said video apparatus is supplied with a plurality of audio/video input signals, and said re-encoder is comprised by:

a multiplexer for time-division multiplexing of the plurality of audio/video input signals, and outputting time-division multiplexed audio/video signals;

- 5 a decoding section for decoding the time-division multiplexed signals, and
outputting decoded audio/video signals;
- an audio/video processing section for applying a specific process to the decoded
audio/video signals, and outputting processed audio/video signals; and
- an encoder for compression encoding the processed audio/video signals, and
10 outputting compression encoded audio/video signals as the re-encoded audio/video signals.

37. A re-encoder according to claim 24, wherein said video apparatus is supplied with a
plurality of audio/video input signals, and said re-encoder is comprised by:

a plurality of decoding sections for decoding the plurality of audio/video input
signals individually, and outputting a plurality of decoded audio/video signals;

- 5 a multiplexer for time-division multiplexing of the plurality of decoded audio/video
signals, and outputting time-division multiplexed audio/video signals;

an audio/video processing section for applying a specific process to the time-division
multiplexed audio/video signals, and outputting processed audio/video signals; and

- an encoder for compression encoding the processed audio/video signals, and
10 outputting compression encoded audio/video signals as the re-encoded audio/video signals.

38. A re-encoder according to claim 24, wherein said re-encoder is comprised by:

a decoding section for decoding audio/video input signals, and outputting decoded
audio/video signals;

an image resolution conversion filter for converting a resolution of the video signal
 5 portion of the audio/video signals, and outputting converted audio/video signals; and
 an encoder for encoding said decoded audio/video signals and said converted
 audio/video signals, and outputting encoded audio/video signals as the re-encoded signals.

39. A video apparatus according to claim 2, wherein said re-encoder is comprised by:
 a decoding section for decoding audio/video input signals, and outputting decoded
 audio/video signals;
 a deleter for deleting a portion of the decoded audio/video signals, and outputting
 5 deleted audio/video signals; and
 an encoder for separately encoding said decoded audio/video signals and said deleted
 audio/video signals, and outputting two independent groups of encoded audio/video signals
 as the re-encoded signals.

40. A re-encoder according to claim 39, wherein said deleter deletes video frames in the
 decoded audio/video signals at a given frame interval.

41. A re-encoder according to claim 24, wherein said re-encoder is comprised by:
 a decoding section for decoding audio/video input signals, and outputting decoded
 audio/video signals;
 an audio/video information memory for temporarily storing the decoded audio/video
 5 signals, and outputting stored audio/video signals; and

an encoder for compression encoding the stored audio/video signals, and outputting compression encoded audio/video signals as the re-encoded signals; and

means for outputting a specific video frame stored in the audio/video information memory as a still image.

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42. A re-encoder according to claim 24, wherein said video apparatus is supplied with first audio/video input signals and second audio/video input signals, and said re-encoder is comprised by:

5 a decoding section for decoding and processing the first audio/video signals, and outputting decoded audio/video signals and coding parameters of the decoded audio/video signals;

a selector for selecting either said decoded audio/video signals or said second audio/video input signals, and outputting selected audio/video signals; and

10 an encoder for encoding the selected audio/video signals according to the coding parameters, and outputting encoded audio/video signals as the re-encoded audio/video signals.

43. A re-encoder according to claim 24, wherein said video apparatus is supplied with first audio/video input signals and second audio/video input signals, and said re-encoder is comprised by:

5 outputting decoded audio/video signals and coding parameters of the decoded audio/video signals;

an image resolution conversion filter for converting a resolution of the selected
10 audio/video signals, and outputting converted coding parameters;

an encoder for encoding the converted audio/video signals according to the
15 converted-coding parameters, and outputting encoded audio/video signals as the re-encoded
audio/video signals.